WHAT IS CLAIMED IS:

1. An image forming device network system, a parent device including a first image scanning unit for scanning an image to generate image data, a first memory unit connected to the first image scanning unit for storing the image data that has been scanned in by the image scanning unit, a first image forming unit connected to the first memory unit for reading the image data and forming an image on an image-transferring medium and a first control unit connected to the first image scanning unit, the first memory unit and the first image forming unit for controlling the first image scanning unit, the first memory unit and the image forming unit, the first control unit controlling transfer of the image data via the network, at least one child device connected to the parent device through a network including a second memory unit operationally connected to the first memory unit for storing the image data that has been transferred from the first memory unit via the network, a second image forming unit connected to the second memory unit for reading the transferred image data and forming an image on an image-transferring medium, a second control unit connected to the second memory unit and the second image forming unit for controlling the second memory unit and the second image forming unit, the image forming device network system comprising:

a collaboration unit connected to the parent device and the child device for activating a collaboration mode for a collaboration print job between the child device and the parent device;

a receiving unit located at the child device and connected to the parent device for receiving the image data that is transferred from the parent device to the child device; and

an execution unit connected to said receiving unit for initiating the second image forming unit for the collaboration print job only after an entire portion of a predetermined size of the transferred image data for the collaboration print job is stored in the second memory unit.

2. The image forming device network system according to claim 1 further comprising a first remaining memory detection unit connected to the first memory unit for detecting a remaining amount of memory in the first memory unit.

3. The image forming device network system according to claim 1 further comprising a second remaining memory detection unit connected to the second memory unit for detecting a remaining amount of memory in the second memory unit.

4. The image forming device network system according to claim 3 wherein said second remaining memory detecting unit detects a predetermined remaining memory level in the second memory unit to generate a memory full signal, said second remaining memory detecting unit further comprising a reporting sub-unit for reporting the memory full signal to the parent device.

5. The image forming device network system according to claim 4 further comprising a transfer interrupt unit located at the parent device and connected to said second remaining memory detecting unit and said collaboration unit for interrupting the transfer of the image data to the child device via the network upon receiving the memory full signal.

6. The image forming device network system according to claim 5 wherein said collaboration unit cancels the collaboration print job after the image transfer has been interrupted from the parent device to the child device, said collaboration unit removing the transferred image data from the second memory unit.

7. The image forming device network system according to claim 6 wherein said collaboration unit deactivates the collaboration mode.

8. The image forming device network system according to claim 7 further comprising a reservation unit located at the parent device for reserving next ones of the collaboration print job while the collaboration print job is being executed.

9. The image forming device network system according to claim 8 wherein said reservation unit informs said collaboration unit of no reservation job to preserve the collaboration mode if no job has been reserved when said second remaining memory detecting unit detects the predetermined remaining memory level in the second memory unit.

10. The image forming device network system according to claim 8 wherein said reservation unit informs said collaboration unit of a reservation job to deactivate the collaboration mode if a job has been reserved when said second remaining memory detecting unit detects the predetermined remaining memory level in the second memory unit.

11. The image forming device network system according to claim 8 wherein said collaboration unit onsets the image data transfer from the parent device to the child device when the corresponding one of the reserved jobs becomes the activated collaboration print job.

12. The image forming device network system according to claim 11 wherein said collaboration unit prevents the image data transfer if the parent device completes the activated collaboration print job before the child device has a chance to perform the activated collaboration print job.

13. The image forming device network system according to claim 11 wherein said collaboration unit interrupts the image data transfer if the parent device initiates a last portion of the activated collaboration print job while the image data is being transferred from the parent device to the child devices, said collaboration unit removing the transferred image data from the second memory unit.

14. The image forming device network system according to claim 1 wherein said collaboration unit removes the image data from the first memory unit when said collaboration unit determines that the collaboration print job between the child device and the parent device is completed.

15. The image forming device network system according to claim 1 further comprising a selection unit connected to said collaboration unit for a user to select the collaboration mode or a single operation mode for a print job.

16. The image forming device network system according to claim 3 further comprising a memory comparison unit connected to said second remaining memory detection unit for comparing the remaining memory amount in the second memory unit and a size of the image data to generate a comparison result.

17. The image forming device network system according to claim 16 wherein said memory comparison unit further comprises a transfer determination sub-unit for determining an image data transfer of the image data based upon the comparison result.

18. The image forming device network system according to claim 17 wherein said transfer determination sub-unit interrupts the image data transfer if the remaining memory amount in the second memory unit is less than the image data size.

19. The image forming device network system according to claim 16 further comprising a display unit connected to said memory comparison unit for displaying information on the child device having the remaining memory amount in the second memory unit that is larger than the image data size.

20. The image forming device network system according to claim 1 further comprising a distribution unit connected to said collaboration unit for distributing the collaboration print job to a selected one of the child devices based upon availability and a current load amount.

21. The image forming device network system according to claim 20 further comprising a remaining resource monitoring unit connected to said distribution unit for monitoring a remaining resource at the parent device and each of the child devices.

22. The image forming device network system according to claim 21 wherein the remaining resource includes paper and toner.

23. The image forming device network system according to claim 21 wherein said distribution unit determines whether or not the parent device alone prints an entire portion of the collaboration print job based upon the remaining resource at the parent device.

24. The image forming device network system according to claim 23 wherein said distribution unit assigns a part of the collaboration print job to a selected one of the child devices based upon the remaining resource at the child devices if the remaining resource at the parent device is not sufficient for the collaboration print job.

25. The image forming device network system according to claim 24 further comprising a display unit located at the parent device connected to said distribution unit for displaying information on the selected child device.

26. The image forming device network system according to claim 24 further comprising a display unit located at the child device connected to said distribution unit for displaying information on the collaboration job.

27. The image forming device network system according to claim 1 further comprising an image consolidation unit connected to said collaboration unit for consolidating the image data in a predetermined manner to generate consolidated image data before transferring from the parent device to the child device.

28. The image forming device network system according to claim 27 further comprising a determination unit for determining whether a print mode is in a stack mode or a sort mode prior to generating the consolidated image data.

29. The image forming device network system according to claim 28 wherein said image consolidation unit at the parent device generates all of the consolidated image data and transfers the consolidated image data from a first portion in case of the sort mode.

30. The image forming device network system according to claim 28 wherein said image consolidation unit at the parent device generates all of the consolidated image data and transfers the consolidated image data from a last portion in case of the stack mode.

31. The image forming device network system according to claim 28 wherein the transferred image at the child device is removed as soon as the collaboration print job at the child device is complete.

32. The image forming device network system according to claim 1 wherein the parent device transfers the image data from a last portion and the child device prints the image data from the last portion in a stack mode during the collaboration mode.

33. The image forming device network system according to claim 32 wherein the parent device terminates the transfer of the image data if a corresponding image is already printed.

34. The image forming device network system according to claim 33 wherein if the parent device completes the transfer of the image data to the child device, the child device normally completes printing of the transferred image and the parent device also completes printing of the image data, the image data is removed from the first and second memory units.

35. An image forming device network system, comprising:

a parent device further comprising:

a first image scanning unit for scanning an image to generate image data;

a first memory unit connected to said first image scanning unit for storing the image data that has been scanned in by said image scanning unit;

a first image forming unit connected to said first memory unit for reading the image data and forming an image on an image-transferring medium; and

a first control unit connected to said first image scanning unit, said first memory unit and said first image forming unit for controlling said first image scanning unit, said first memory unit and said image forming unit, said first control unit controlling transfer of the image data via the network; and

at least one child device connected to said parent device through a network further comprising:

a second memory unit operationally connected to said first memory unit for storing the image data that has been transferred from said first memory unit via the network;

a second image forming unit connected to said second memory unit for reading the transferred image data and forming an image on an image-transferring medium; and

a second control unit connected to said second memory unit and said second image forming unit for controlling said second memory unit and said second image forming unit, wherein said first control unit and said second control unit performing a collaboration print job, said first control unit and said second control unit initiating a collaboration mode for the collaboration print job only after an entire portion of a predetermined size of the transferred image data for the collaboration print job is stored in said second memory unit.

36. The image forming device network system according to claim 35 further comprising a first remaining memory detection unit connected to said first memory unit for detecting a remaining amount of memory in said first memory unit.

37. The image forming device network system according to claim 35 further comprising a second remaining memory detection unit connected to said second memory unit for detecting a remaining amount of memory in said second memory unit.

38. The image forming device network system according to claim 37 wherein said second remaining memory detecting unit detects a predetermined remaining memory level in said second memory unit to generate a memory full signal, said second remaining memory detecting unit further comprises a reporting sub-unit for reporting the memory full signal to said parent device.

39. The image forming device network system according to claim 38 wherein said parent device stops the transfer of the image data to said child device via the network upon receiving the memory full signal.

40. The image forming device network system according to claim 39 wherein said first control unit and said second control unit cancel the collaboration print job after the image transfer has been interrupted from the parent device to the child device, said first control unit and said second control unit removing the transferred image data from the second memory unit.

41. The image forming device network system according to claim 40 wherein said second control unit deactivates the collaboration mode.

42. The image forming device network system according to claim 41 further comprising a reservation unit located at the parent device for reserving next ones of the collaboration print job while the collaboration print job is being executed.

43. The image forming device network system according to claim 42 wherein said reservation unit informs said first control unit and said second control unit of no reservation job to preserve the collaboration mode if no job has been reserved when said second remaining memory detecting unit detects a predetermined remaining memory level in the second memory unit.

44. The image forming device network system according to claim 43 wherein said reservation unit informs said first control unit and said second control unit of no reservation job to deactivate the collaboration mode if a job has been reserved when said second remaining memory detecting unit detects a predetermined remaining memory level in the second memory unit.

45. An image forming apparatus connected to at least one of other image forming devices, comprising:

a memory unit for storing print data;

a collaboration unit connected to the one of the image forming devices for transmitting transmission data for the stored print data to and receiving from the one of the image forming devices; and

a removing unit connected to said memory unit for removing the stored print data from said memory unit, wherein said collaboration unit receives a complete report indicative of a print process at the one of the image forming devices, wherein said removing unit removes the stored print data from said memory unit based upon the received complete report when said removing unit determines that the print process is complete at the one of the image forming devices and the image forming apparatus if the image forming apparatus and the one of the image forming devices share the print process.

46. The image forming apparatus according to claim 45 wherein the print process is a sort print process.

47. The image forming apparatus according to claim 45 wherein the print process is a stack print process.

48. The image forming apparatus according to claim 47 wherein said collaboration unit transmits a removal request to the one of the image forming devices for removing the stored print data for a requested number of copies that has been completed if the image forming apparatus and the one of the image forming devices share the print process.

49. An image forming apparatus connected to at least one of other image forming devices, comprising:

a collaboration unit connected to the one of the image forming devices for transmitting transmission data for print data to and receiving from the one of the image forming devices;

a memory unit connected to said collaboration unit for storing the print data;

a printing unit connected to said memory unit for printing the print data; and

a removing unit connected to said memory unit for removing the stored print data from said memory unit, wherein said collaboration unit receives a complete report indicative of a print process at the one of the image forming devices, wherein said removing unit removes a portion of the stored print data from said memory unit if the image forming apparatus and the one of the image forming devices share the print process, the portion being allocated for printing at the image forming apparatus and having been printed.

50. The image forming apparatus according to claim 49 wherein said collaboration unit receives a data removal request from the one of the image forming devices for a requested number of copies that has been completed at the one of the image forming devices, said removing unit removing a portion of the stored print data from said memory unit, the portion corresponding to the data removal request.

51. The image forming apparatus according to claim 49 wherein said collaboration unit asks the one of the image forming devices for a print permission for each copy of the stored print data, said removing unit removing a portion of the stored print data, the portion corresponding a total of copies that includes copies that are not permitted for printing and copies that have been already printed at the image forming apparatus.

52. An image forming apparatus, comprising:

a scanning unit for scanning an original document to generate image data;

a storing unit connected to said scanning unit for storing the scanned image data;

an image forming unit connected to said storing unit for forming an image on an image transfer medium based upon the stored image data;

a monitoring unit for monitoring information on image forming devices connected to the image forming apparatus;

a network connecting unit for connecting with the network;

a collaborating unit connected to said storing unit for transferring the scanned image data to one of the connected image forming devices for a collaboration print job;

a selecting unit connected to said collaborating unit for selectively activating said collaborating unit;

a memory monitoring unit connected to the connected image forming devices for monitoring a remaining amount of memory in each of the connected image forming devices; and

a distributing unit connected to said collaboration unit for determining the distribution of the collaboration print job to a selected one of the child devices based upon availability and a current load amount.

53. The image forming apparatus according to 52 further comprising a remaining paper monitoring unit connected to said distribution unit for monitoring a remaining amount of paper at the image forming apparatus and each of the connected image forming devices, said distribution unit determining whether or not the image forming apparatus alone prints an entire portion of the

collaboration print job based upon the remaining amount of paper at the image forming apparatus, in case that the image forming apparatus lacks a sufficient amount of remaining paper, said distribution unit selecting one of the connected image forming devices that has the sufficient amount of the remaining paper.

54. The image forming apparatus according to 52 further comprising a remaining toner monitoring unit connected to said distribution unit for monitoring a remaining amount of toner at the image forming apparatus and each of the connected image forming devices, said distribution unit determining whether or not the image forming apparatus alone prints an entire portion of the collaboration print job based upon the remaining amount of toner at the image forming apparatus, in case that the image forming apparatus lacks a sufficient amount of remaining toner, said distribution unit selecting one of the connected image forming devices that has the sufficient amount of the remaining toner.

55. The image forming apparatus according to claim 55 further comprising a display unit located at the image forming apparatus connected to said distribution unit for displaying information on the selected connected image forming device.

56. The image forming apparatus according to claim 55 further comprising a display unit located at the image forming device connected to said distribution unit for displaying information on the collaboration job.

57. A method of collaboration between an image forming apparatus and image forming devices, comprising the steps of:

monitoring information on image forming devices connected to the image forming apparatus;

estimating a memory amount based upon a currently executing job and reserved jobs;

comparing the estimated memory amount and a remaining memory amount to generate a comparison result;

determining whether or not any one of the jobs is distributed based upon the monitored information in case the comparison result indicates a lack of memory;

displaying job distribution information if the job is to be distributed to any one of the image forming devices;

transferring image data for the distributed job to the selected image forming device;

displaying the job distribution information if the job has been distributed to the selected image forming device; and

executing the job at the selected image forming device.

58. A method of collaboration between an image forming apparatus and image forming devices, comprising the steps of:

monitoring information on image forming devices connected to the image forming apparatus;

estimating an amount of necessary paper based upon a currently executing job and reserved jobs;

comparing the estimated paper amount and a remaining paper amount to generate a comparison result;

determining whether or not any one of the jobs is distributed based upon the monitored information in case the comparison result indicates a lack of the remaining paper amount;

displaying job distribution information if the job is to be distributed to any one of the image forming devices;

transferring image data for the distributed job to the selected image forming device;

displaying the job distribution information if the job has been distributed to the selected image forming device; and

executing the job at the selected image forming device.

59. A method of collaboration between an image forming apparatus and image forming devices, comprising the steps of:

monitoring information on image forming devices connected to the image forming apparatus;

estimating an amount of necessary toner based upon a currently executing job and reserved jobs;

comparing the estimated toner amount and a remaining toner amount to generate a comparison result;

determining whether or not any one of the jobs is distributed based upon the monitored information in case the comparison result indicates a lack of the remaining toner amount;

displaying job distribution information if the job is to be distributed to any one of the image forming devices;

transferring image data for the distributed job to the selected image forming device;

displaying the job distribution information if the job has been distributed to the selected image forming device; and

executing the job at the selected image forming device.

60. A computer readable program for collaboration between an image forming apparatus and image forming devices, comprising the tasks of:

monitoring information on image forming devices connected to the image forming apparatus;

estimating a memory amount based upon a currently executing job and reserved jobs;

comparing the estimated memory amount and a remaining memory amount to generate a comparison result;

determining whether or not any one of the jobs is distributed based upon the monitored information in case the comparison result indicates a lack of memory;

displaying job distribution information if the job is to be distributed to any one of the image forming devices;

transferring image data for the distributed job to the selected image forming device;

displaying the job distribution information if the job has been distributed to the selected image forming device; and

executing the job at the selected image forming device.

61. A computer readable program for collaboration between an image forming apparatus and image forming devices, comprising the tasks of:

monitoring information on image forming devices connected to the image forming apparatus;

estimating an amount of necessary paper based upon a currently executing job and reserved jobs;

comparing the estimated paper amount and a remaining paper amount to generate a comparison result;

determining whether or not any one of the jobs is distributed based upon the monitored information in case the comparison result indicates a lack of the remaining paper amount;

displaying job distribution information if the job is to be distributed to any one of the image forming devices;

transferring image data for the distributed job to the selected image forming device;

displaying the job distribution information if the job has been distributed to the selected image forming device; and

executing the job at the selected image forming device.

62. A computer readable program for collaboration between an image forming apparatus and image forming devices, comprising the tasks of:

monitoring information on image forming devices connected to the image forming apparatus;

estimating an amount of necessary toner based upon a currently executing job and reserved jobs;

comparing the estimated toner amount and a remaining toner amount to generate a comparison result;

determining whether or not any one of the jobs is distributed based upon the monitored information in case the comparison result indicates a lack of the remaining toner amount;

displaying job distribution information if the job is to be distributed to any one of the image forming devices;

transferring image data for the distributed job to the selected image forming device;

displaying the job distribution information if the job has been distributed to the selected image forming device; and

executing the job at the selected image forming device.

63. A method of collaboration in an image forming device network system, a parent device scanning an image to generate image data and to store the image data, the parent device reading the image data and forming an image on an image-transferring medium, the parent device transferring the image data to a selected one of child devices that are connected to the parent device through a network, the child device storing the image data that has been transferred from the parent device reading the transferred image data to form an image on an image-transferring medium, the method comprising the steps of:

activating a collaboration mode for a collaboration print job between the child device and the parent device;

receiving at the child device the image data that is transferred from the parent device to the child device; and

initiating the collaboration print job only after an entire portion of a predetermined size of the transferred image data for the collaboration print job is stored in the child device.

64. The method of collaboration in an image forming device network system according to claim 63 further comprising an additional step of detecting a remaining amount of memory in the parent device.

65. The method of collaboration in an image forming device network system according to claim 63 further comprising an additional step of detecting a remaining amount of memory in the child device.

66. The method of collaboration in an image forming device network system according to claim 65 wherein if a predetermined remaining memory level in the child device is detected, a memory full signal is generated and the memory full signal is reported to the parent device.

67. The method of collaboration in an image forming device network system according to claim 66 further comprising an additional step of interrupting the transfer of the image data to the child device via the network upon receiving the memory full signal.

68. The method of collaboration in an image forming device network system according to claim 67 wherein the collaboration print job is cancelled after the image transfer has been interrupted from the parent device to the child device, the transferred image data is removed from the child device.

69. The method of collaboration in an image forming device network system according to claim 68 wherein the collaboration mode is deactivated.

70. The method of collaboration in an image forming device network system according to claim 69 further comprising an additional step of reserving next ones of the collaboration print job while the collaboration print job is being executed.

71. The method of collaboration in an image forming device network system according to claim 70 wherein the collaboration mode is preserved if no job has been reserved when the predetermined remaining memory level is detected in the child device.

72. The method of collaboration in an image forming device network system according to claim 70 wherein the collaboration mode is deactivated if a job has been reserved when the predetermined remaining memory level is detected in the child device.

73. The method of collaboration in an image forming device network system according to claim 70 wherein the image data transfer is initiated from the parent device to the child device when the corresponding one of the reserved jobs becomes the activated collaboration print job.

74. The method of collaboration in an image forming device network system according to claim 73 wherein the image data transfer is prevented if the parent device completes the activated collaboration print job before the child device has a chance to perform the activated collaboration print job.

75. The method of collaboration in an image forming device network system according to claim 73 wherein the image data transfer is interrupted if the parent device initiates a last portion of the activated collaboration print job while the image data is being transferred from the parent device to the child devices, the transferred image data being removed from the second memory unit.

76. The method of collaboration in an image forming device network system according to claim 63 wherein the image data is removed from the parent device when the collaboration print job between the child device and the parent device is completed.

77. The method of collaboration in an image forming device network system according to claim 63 further comprising an additional step of selecting the collaboration mode or a single operation mode for a print job.

78. The method of collaboration in an image forming device network system according to claim 65 further comprising an additional step of comparing the remaining memory amount in the child device and a size of the image data to generate a comparison result.

79. The method of collaboration in an image forming device network system according to claim 78 further comprising an additional step of determining an image data transfer of the image data based upon the comparison result.

80. The method of collaboration in an image forming device network system according to claim 79 wherein the image data transfer is interrupted if the remaining memory amount in the second memory unit is less than the image data size.

81. The method of collaboration in an image forming device network system according to claim 78 further comprising an additional step of displaying information on the child device having the remaining memory amount that is larger than the image data size.

82. The method of collaboration in an image forming device network system according to claim 63 further comprising an additional step of distributing the collaboration print job to a selected one of the child devices based upon availability and a current load amount.

83. The method of collaboration in an image forming device network system according to claim 82 further comprising an additional step of monitoring a remaining resource at the parent device and each of the child devices.

84. The method of collaboration in an image forming device network system according to claim 83 wherein the remaining resource includes paper and toner.

85. The method of collaboration in an image forming device network system according to claim 83 further comprising an additional step of determining whether or not the parent device alone prints an entire portion of the collaboration print job based upon the remaining resource at the parent device.

86. The method of collaboration in an image forming device network system according to claim 85 wherein a part of the collaboration print job is assigned to a selected one of the child devices based upon the remaining resource at the child devices if the remaining resource at the parent device is not sufficient for the collaboration print job.

87. The method of collaboration in an image forming device network system according to claim 86 further comprising an additional step of displaying information on the selected child device.

88. The method of collaboration in an image forming device network system according to claim 86 further comprising an additional step of displaying information on the collaboration job.

89. The method of collaboration in an image forming device network system according to claim 63 further comprising an additional step of consolidating the image data in a predetermined manner to generate consolidated image data before transferring from the parent device to the child device.

90. The method of collaboration in an image forming device network system according to claim 89 further comprising an additional step of determining whether a print mode is in a stack mode or a sort mode prior to generating the consolidated image data.

91. The method of collaboration in an image forming device network system according to claim 90 wherein all of the consolidated image data is generated and the consolidated image data is transferred from a first portion in case of the sort mode.

92. The method of collaboration in an image forming device network system according to claim 90 wherein all of the consolidated image data is generated and the consolidated image data is transferred from a last portion in case of the stack mode.

93. The method of collaboration in an image forming device network system according to claim 90 wherein the transferred image at the child device is removed as soon as the collaboration print job at the child device is complete.

94. The method of collaboration in an image forming device network system according to claim 63 wherein the parent device transfers the image data from a last portion and the child device prints the image data from the last portion in a stack mode during the collaboration mode.

95. The method of collaboration in an image forming device network system according to claim 94 wherein the parent device terminates the transfer of the image data if a corresponding image is already printed.

96. The method of collaboration in an image forming device network system according to claim 95 wherein if the parent device completes the transfer of the image data to the child device, the child device normally completes printing of the transferred image and the parent device also completes printing of the image data, the image data is removed from the first and second memory units.

97. The image forming device network system according to claim 1 wherein said collaboration unit further comprises an allocation unit for allocating an initial share of the collaboration print job at the child device and the parent device, wherein said collaboration unit monitors printing of the collaboration print job at the child device and the parent device to generate a print completion signal, said allocating unit further reallocating a remaining share of the collaboration print job at the child device and the parent device based upon the print completion signal.

98. The image forming device network system according to claim 35 wherein said first control unit further comprises an allocation unit for allocating an initial share of the collaboration print job at the child device and the parent device, wherein said first control unit and said second control unit respectively monitor printing of the collaboration print job at the parent device and the child device

to generate a print completion signal, said allocation unit further reallocating a remaining share of the collaboration print job at the child device and the parent device based upon the print completion signal.

99. The method of collaboration in an image forming device network system according to claim 63 further comprising additional steps of:

allocating an initial share of the collaboration print job at the child device and the parent device;

monitoring printing of the collaboration print job at the parent device and the child device to generate a print completion signal; and

further reallocating a remaining share of the collaboration print job at the child device and the parent device based upon the print completion signal.